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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, HSIEN MING

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 04/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,594

Applicant(s)

REINBERG, ALAN R.

Examiner

Hsien-Ming Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 53-62 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 53-62 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the length is too long. Applicant is reminded of the format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The current abstract contains 222 words.

In addition, the data in "CROSS REFERENCE TO RELATED APPLICATION" needs to be updated since application number 09/389,533 has been issued as US 6,403,442.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 15-17 and 59 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation "anisotropically etching said layer", as recited in claims 15-17, renders indefinite because it is not clear as to which layer refers to "said layer." Does it refer to "a capacitor storage node layer" or "a layer of material?"

The limitation "anisotropically etching the layer", as recited in claim 59 (lines 4-5), renders indefinite because it is not clear as to which layer refers to "the layer." Does it refer to "a capacitor storage node layer" or "an insulative material layer?"

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 7, 8, 11, 14-18, 53-57 and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by DeBoer (US 6,326,277).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

In re claims 1, 53, 55, DeBoer expressly teaches a method of forming a capacitor comprising:

- forming a capacitor storage node layer 134 over a substrate 187, the capacitor storage node layer 134 having an uppermost rim defining an opening 120 (i.e. the cavity) into an interior volume (Fig.7);
- forming a cap 150 (an insulative material layer) by capping at least a portion of the rim within the interior volume by forming a material 150 (i.e. an insulative material)

which is different from the capacitor storage node layer 134 (i.e. HSG) over the rim portion (Fig.9); and

- forming a capacitor dielectric region 150 and a cell electrode layer 160 over the capacitor node layer 134 within the interior volume (Fig.9)

In re claim 2, DeBoer also teaches that the capping of the rim portion comprises forming an insulative material 150 thereover. (Fig.9)

In re claims 3 and 56, DeBoer also teaches that the capping of the rim portion comprises forming an insulative material 150 within less than an entirety of the interior volume (i.e. the interior volume of the opening 120) (Fig.9).

In re claims 4 and 57, DeBoer further teaches that the capping of the rim portion comprises forming an insulative material layer 150 over the substrate 187 and anisotropically etching the insulative material layer 150 by patterning (Fig.9).

In re claims 7 and 60, DeBoer also teaches that the forming of the capacitor storage node layer 134 comprises: forming a container 120 (i.e. the cavity) into a container-defining material 132/199 over the substrate 187; forming a capacitor storage node layer 134 within the container 120; and recessing the capacitor storage node layer 134 to below an uppermost surface of the container-defining material 132/199 (Fig.9).

In re claim 8, DeBoer further teaches that the capacitor storage node layer 134 comprises roughened polysilicon (i.e. HSG)(col.10, lines 14-16).

In re claim 11, DeBoer also teaches that the forming of the capacitor storage node layer 134 comprises: forming a container 120 into a container-defining material 132/199 over the substrate 187; forming a capacitor storage node layer 134 within the container 120; recessing the

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capacitor storage node layer 134 to below an uppermost surface of the container-defining material 132/199; and wherein the capping of the rim portion comprises forming an insulative material layer 150 over the substrate 187 and anisotropically etching the insulative material layer 150 by patterning (Fig.9).

In re claims 14, 15 and 54, DeBoer expressly and inherently teaches a method of forming a capacitor comprising: forming a capacitor storage node layer 134 over a substrate 187, the capacitor storage node layer 134 having an uppermost rim defining an opening 120 into an interior volume; forming a layer of material 150 over the uppermost rim within the interior volume (i.e. the interior volume of the opening 120); and further comprising anisotropically etching said layer of material 150 sufficient to leave a portion of the layer of material 150 occluding the opening 120 (Fig.9).

In re claims 16 and 17, DeBoer also teach anisotropically etching said layer of material 150 sufficient to leave a portion of the layer of material 150 extending into the interior volume and occluding the opening 120 (Fig.9).

In re claim 18, DeBoer teaches that the forming of the layer of material 150 comprises forming a portion of said layer of material 150 to contact the storage node layer 134 (Fig.9).

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-18 and 53-62 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 2, of U.S. Patent No. 6,403,442

Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim common subject matter.

In particular, claim 1 as recited in the Patent is equivalent to claims 1, 53 and 55 of the instant invention; claims 2-18 as recited in the Patent are equivalent to claims 2-18 of the instant invention, respectively; claim 14 as recited in the Patent is equivalent to claim 54 of the instant invention; and claims 3-7, 9 and 10 as recited in the Patent is equivalent to claims 56-62 of the instant invention.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lou to US 6,159,793, Linliu et al. to US 6,136,646 and Ping to US 6,235,605 teach the common subject matter as claimed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-Ming Lee whose telephone number is 703-305-7341. The examiner can normally be reached on M-F (9:00 ~ 5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hsien-Ming Lee
Examiner
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April 9, 2003